IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Jari SIRVIÖ et al — Conf. No: 9131

Application No: 10/500,056 — Art Unit: 3617

Filed: June 23, 2004 — Examiner: Jesus D. Sotelo

For: ARRANGEMENT FOR STEERING A WATER-CRAFT

REPLY BRIEF UNDER 37 CFR 41.41

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Appellant submits this brief in reply to the examiner's answer mailed December 5, 2007.

The examiner's statement of the grounds of rejection in the answer is essentially the same as the statement of the rejection in the final action mailed April 17, 2007 and addressed in the principal brief. Appellant therefore confines this reply brief to comments on the examiner's responses to appellant's arguments in the principal brief.

1. In the final rejection, the examiner stated that the motivation for applying the teaching of Oshima to the vessel of Tigges et al "is very clear" (final rejection, paragraph 6, line 3): auxiliary steering propellers would provide more positive steering of a watercraft having a shaft driven main propeller. In the principal brief appellant explained that application of the teaching of Oshima to the ship of Tigges et al would reduce the steering performance. In the answer, the examiner appears to argue that the motivation is to reduce stress on the mounting

components for the steering propellers 6 of Tigges et al. Perhaps the motivation is not so clear after all. In any event, the inference drawn by the examiner on page 6 of the answer from the fact that the steering propellers 6 of Tigges et al impart thrust to the hull through a connection that permits the steering propellers to rotate about a vertical axis (i.e. that the manner in which the steering propellers are mounted creates problems such that it would be desirable to modify the vessel of Tigges et al so as to reduce the stress on the mounting components for the steering propellers) is based on speculation and is not supported by any evidence of record. Although the Court in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. _____ (2007), emphasized that common sense has a part to play in the obviousness analysis, common sense also dictates that the designer of a ship based on the disclosure of Tigges et al will comply with good design practice and make sure that the mounting components of the steering propellers are properly designed and constructed to withstand the stress to which they are subjected. Further, Tigges et al corresponds to U.S. Patent 6,893,304 (Andersen et al) and the presumption of validity of the U.S. patent includes a presumption that the disclosure is enabling and that the vessel disclosed by the U.S. patent (and also by Tigges et al) will operate in the manner described, i.e. the manner in which the steering propellers 6 are mounted will not create problems when used to propel the vessel under normal circumstances.

2. The claim at issue in *KSR* recited a support, an adjustable pedal assembly having a pedal arm movable for and aft with respect to the support, a pivot for supporting the adjustable pedal assembly with respect to the support, and an electronic pedal position sensor attached to the support. *KSR*, slip op. at 6. The claim further recited that the position of the pivot remained constant while the pedal arm moved in fore and aft directions with respect to the pivot. The problem that the

inventor Engelgau had been attempting to solve was how to provide an adjustable pedal with an electronic pedal position sensor and Engelgau solved this problem by attaching the pedal position sensor to the support. The Court, however, emphasized that neither the motivation nor the purpose of the patentee controls in determining whether the claimed subject matter was obvious. Slip op. at 16. In essence, the Court instructed that courts and patent examiners should determine obviousness objectively having regard to the closest prior art reference, without regard to the subjective motivation of the patentee/applicant and without regard to the problem addressed by the reference. In *KSR*, the Court found that the closest prior art reference was Asano, which "reveals a support structure that houses the pedal so that even when the pedal location is adjusted relative to the driver, one of the pedal's pivot points stays fixed," slip op. at 4. All that was missing from Asano was an electronic pedal position sensor attached to the support. The problem objectively faced by an inventor in the position of Engelgau was how to provide the pedal of Asano with an electronic pedal position sensor.

The Court in *KSR* emphasized that "any problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed," slip op. at 16. The prior art in *KSR* was replete with patents indicating that a fixed pivot point was an ideal mount for a sensor (Slip op. at 17) i.e. the problem of mounting an electronic pedal position sensor to a pedal was known in the field of endeavor and had been solved by mounting the sensor to the fixed pivot point. The consequent legal question (Slip op. at 21) was whether a person of ordinary skill in the art would have found it obvious to put the sensor on the fixed pivot point of Asano and the Court answered the question in the affirmative.

In reaching its opinion, the Court repeated that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known

in the prior art," and, as acknowledged by the examiner, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." Thus, we learn from *KSR* that the Court of Appeal's reversal of the District Court's grant of the summary judgment was in turn reversed by the Supreme Court because, in part, the prior art showed not only that the objective problem faced by Engelgau had been recognized in the art but also that the problem had been solved in the same manner as it would have been by a person of ordinary skill in the position of Engelgau.

Turning to the claims under appeal, and adopting Tigges et al as the closest prior art reference, differences between the subject matter of claim 8 and the prior art include (a) the main propulsion means located between the two steering propulsion devices and (b) the feature that output required by the steering propellers is less than 50% of the common shaft output of the main propulsion means and the steering propellers. With regard to the main propulsion means, the examiner's argument appears to be that it would have been obvious in view of Oshima to employ a main shaft driven propeller between the steering propellers of Tigges et al because this would reduce stress on the mounting components of the steering propellers. However, the examiner has not drawn attention to a single reference indicating that stress on the mounting components of a steering propeller was a problem "known in the field of endeavor at the time of invention."

Unlike in *KSR*, where the Court found that there was evidence of a recognition among those skilled in the art of the problem of how to provide a suitable mount for an electronic pedal position sensor, appellant submits that the record in this case does not provide any basis that would justify saying that a person of ordinary skill in the art, reviewing the disclosure of Oshima, would recognize that Oshima addressed any problem other than underwater noise. Inferring that stress on the strut of a steering propeller was a problem "known in the field of endeavor"

requires hindsight reformation of the prior art. Neither the examiner nor the Board should interpret a reference as addressing a topic on which it is in fact completely silent.

3. The examiner appears to suggest that the motivation for modifying the propulsion-steering arrangement of Tigges et al by adopting the shaft driven propeller of Oshima would be to combine the high output and low maintenance of a shaft driven propeller with the positive steering of steering propellers (answer, page 7, line 4). The prior art does not show any need for reducing the propulsion force provided by steering propellers and even though propulsion systems using shaft driven propellers have been used for many years and are reliable, common sense dictates that one would expect it to be more expensive to maintain two different types of propulsion systems than just one.

4. The examiner indicates on page 7 of the answer that appellant's argument at page 13, lines 9-17, of the principal brief is not understood. In the passage quoted by the examiner, appellant was making the point that the examiner's justification for combining the references (to provide improved steering of the watercraft) failed because providing the ship of Tigges et al with a shaft driven propeller would not improve steering of the vessel. As discussed in point 1 above, the examiner appears to have changed position with respect to motivation to combine the references and now appears to take the position that the motivation is the desire to reduce the need for maintenance of the propulsion-steering arrangement by reducing stress on the mounting components. The deficiency of this motivation is discussed above.

5. The examiner argues on page 8 of the answer that Oshima is concerned with steerability and high output of the propulsion system and that these features are applicable to any ship. The inference that the steering propellers of Oshima are used for

steering is consistent with these propellers being substantially smaller than the shaft driven propeller 1 and with paragraph 8 of Mr. Hamberg's declaration dated January 24, 2007, in which he points out that the power of the steering propulsion devices necessary to achieve good maneuverability is typically well below the required power for propulsion. Since all the propulsion resources of Tigges et al may be brought to bear in order to steer the vessel, appellant submits that Oshima contains nothing that is relevant to Tigges et al regarding steerability. Modifying the vessel of Tigges et al by providing a shaft driven propeller as the main means of propulsion and using the steering propellers for steering and supplementary propulsion power is not a mere improvement or refinement of the teaching of Tigges et al, such as might be suggested to a person of ordinary skill in the art who wishes to improve the vessel of Tigges et al and is aware of the teaching of Oshima, but is a complete reversal of the teaching of Tigges et al. The argument that it would have been obvious to apply the main propulsion propeller of Oshima to the vessel of Tigges et al to achieve high output, without any evidence that a shaft driven propeller as shown by Oshima would be advantageous in the vessel of Tigges et al, shows no more than that something could be done when what is needed in order to support a rejection on the ground of obviousness is an explanation of why it would have been obvious to a person of ordinary skill that something should be done. A person of ordinary skill in the art seeking to improve steerability and output of the propulsion system of Tigges et al, would be more inclined to provide the vessel with a third steering propeller since this would reduce the stress on the individual steering propellers and provide the advantage of lower inventory requirements for spare parts and a reduced range of skills needed for maintenance.

6. On page 9 of the answer, the examiner discounts the two declarations of Karl Hamberg and apparently finds support for so

doing in the fact that the opinions of Mr. Hamberg are substantially as presented by appellant. In order to reach a decision in this case, the Board will determine the underlying facts, as required by *Graham v. Deere*, 383 U.S. 1 (1966), apply the law to the facts, and decide whether the claimed subject matter would have been obvious to a person having ordinary skill in the art. The facts of record in this case do not include the arguments presented by the examiner and appellant to aid the Board in determining the facts and applying the law. Since Mr. Hamberg has been qualified as an expert, the facts that are of record include Mr. Hamberg's opinions on the subjects on which he is an expert. Mr. Hamberg's opinions must be weighed with the other facts of record (the disclosure of the references) in determining obviousness or not of the claimed subject matter. Based on a careful analysis of the subject matter of the claims of this application and the prior art, Mr. Hamberg concludes that a person of ordinary skill in the art would not have found it obvious to combine the disclosures of Tigges et al and Oshima (and also the disclosure of Heer et al) in the manner suggested by the examiner and arrive at the invention as claimed in the present application. Mr. Hamberg's opinion is based in part on the fact that the power of the steering propulsion devices necessary to achieve good maneuverability is well below the required power for propulsion. Thus, one may infer that if the steering propellers of Tigges et al are sufficient for high speed operation of the vessel (page 1, line 9), the vessel would have no deficiency in maneuverability and consequently a person of ordinary skill in the art would understand that there would be no advantage in improving maneuverability of the vessel of Tigges et al. See also paragraph 6 of the declaration dated January 24, 2007. If the examiner considers that Mr. Hamberg is not in fact an expert or that Mr. Hamberg's opinions are not credible, he should explain why so that the Board will have the benefit of the examiner's opinion (as an advocate, not as an expert) in weighing Mr. Hamberg's expert opinion. The fact that Mr. Hamberg's

opinions are substantially as presented by appellant does not impair the credibility of Mr. Hamberg's declarations but rather tends to show that the Board should accept appellant's contentions regarding the disclosure of the references.

7. The examiner's arguments regarding the power relationship set forth in claim 8 and discussed in point D on page 15 of the appeal brief is not based on an objective view of the disclosure of the prior art but on a search for an interpretation that supports the rejection. The fact that the shaft driven propeller 1 of Oshima is intended as the main drive of a vessel that is also equipped with two steering propellers is not sufficient to suggest to a person of ordinary skill in the art that the vessel of Tigges et al should be modified by providing a shaft driven propeller and dedicating the major part of the ship's propulsion power to the shaft driven propeller and a minor part to the steering propellers. The examiner seems to assume that it would have been obvious to employ a similar power allocation in the vessel of Tigges et al (modified to include a shaft driven propeller) as in the vessel of Oshima but has not explained why the steering propellers of Tigges et al which, as disclosed, provide all the power required for propulsion of the vessel, should be relegated to an auxiliary role or why the power allocation appropriate for a research vessel would be considered suitable for a RoRo or RoPax vessel as disclosed by Tigges et al.

8. Neither the statement of the final rejection starting on page 2 of the action mailed April 17, 2007 nor the statement of the rejection in the examiner's answer refers to Heer et al. Nevertheless, appellant believes that the examiner relies on Heer et al in interpreting the disclosure of Tigges et al. The examiner suggests that the space 16 between the deck 15 and the bottom 17 of the hull might serve as a maintenance space as required by claim 15. Heer et al does not describe the space 16 as a maintenance space or provide information regarding the

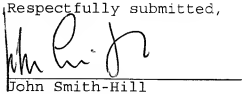
height of the space. FIG. 2 of Heer et al suggests that the height of the space 16 is about half the radius of the propeller and in the case of Tigges et al, the height of the bed of one of the trucks shown in FIG. 3 is about equal to half the radius of the propellers. Appellant believes that the height of a truck bed is typically less than 5 feet, and accordingly, it would be awkward and inconvenient to use the space 16 as a maintenance space. Appellant submits that Tigges et al does not disclose a maintenance space and that it would not have been obvious in view of Heer et al to provide a maintenance space as required by claim 15.

9. The examiner is incorrect in suggesting on page 11 of the answer that a shaft driven propeller cannot provide steering force. FIGS. 5 and 6 of Oshima disclose a main propeller 1 that provides steering force owing to the functional connection between the rudder 4 and the main propeller.

10. Referring to page 11 of the answer, claim 16 does not "merely implement the features of the previous claims." As noted by the examiner, one step in claim 16 is "continuously using the main propulsion means exclusively to propel the watercraft and not to apply steering force to the watercraft" but this mode of operation would not necessarily result from the arrangement in the combination of references proposed by the examiner. If the motivation for combining the references is to improve or maintain maneuverability, then a person of ordinary skill in the art would follow the teaching in FIGS. 5 and 6 of Oshima and employ a rudder that allows the main shaft driven propeller 1 to provide steering force. Tigges et al teaches that the steering propellers should be used both for propelling the watercraft and steering the watercraft. Thus, both Oshima and Tigges et al

disclose that the means employed for propelling the watercraft also provides steering forces.

Respectfully submitted,



John Smith-Hill
Reg. No. 27,730

SMITH-HILL & BEDELL, P.C.
16100 N.W. Cornell Road, Suite 220
Beaverton, Oregon 97006

Tel. (503) 574-3100
Fax (503) 574-3197
Docket: AWEK 2881